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MEMORANDUM

DATE: APRIL 14, 1997

RE: "INDOOR ENVIRONMENT '97," BALTIMORE, MD -- APRIL 7-9, 1997

The following is a summary of presentations at the above titled conference. In addition, attached is a listing of "Presenter Biographies" from the conference proceedings.

Healthy Building Management 101

This session was presented by Frank Gallo, Larry Shoen, and Carleen Stewart. Frank Gallo presented a "proactive management" approach to IAQ, citing the Building Air Quality Guide, the OSHA Proposed IAQ Rule, and ASHRAE 62 and 62R as specific resources for this approach. Mr. Gallo stated that building management should seek compliance with the original design of their building and the ASHRAE standard at the time of construction (e.g., 62-89). He also suggested that the proactive IAQ management approach includes the elimination of "potential IAQ sources," such as ETS.

Larry Shoen selected to discuss his relationship as a representative to ASHRAE and as a consultant to BOMA. He stated that he supports "voluntary standards" and that "most complaints [of poor IAQ] are solved with a simple approach." Carleen Stewart presented a brief outline of some of the legal aspects of management of IAQ from the toxic tort perspective.

Handling Building Related Diseases & Complaints

The presenters for this session were Mary Lamielle, Ed Light, and Sheldon Rabinowitz (replacing Mark Diamond). Ms. Lamielle's presentation included discussion of multiple chemical sensitivity and IAQ. She stated that she felt that tobacco was "over-reported" in complaints of MCS and related an unspecified EPA review of a 1989 study where the complaints had to be thrown out due to the over-reporting. She did not elaborate.

Ed Light presented a discussion of building related complaints and stated that there are few building-related pathogens. He mentioned a yet-to-begin IAQ study of Sing Sing Prison in New York. Sheldon Rabinowitz presented a brief toxicological assessment of BRI. He stated that, as an asthmatic, he is aware of the potential difficulties this issue has legally. He added that in his experience, juries will always side with the plaintiff in cases where there is only a remote connection between their illness/injury and IAQ.

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Accommodating Smoking in the Workplace: Current Programs & Technologies

The lone presenter of this sparsely attended session was Dick Allegrati (Ephraim Heller was scheduled, but did not attend). With the assistance of HBI slides, Mr. Allegrati discussed filtration and dilution criteria for accommodating smoking in the workplace. He suggested that filtration criteria include .3 um filter devices with an efficiency of greater than 95%, including an activated charcoal base to remove gas phase elements of ETS and 65% prefiltration of outside air would be required. He stated that high-efficiency particulate filters (HEPA) would be "gross overkill." Mr. Allegrati also briefly discussed filtration/dilution procedures attempted at a New York City cigar lounge. Given the smoking prevalence (90% continual) in this situation, Mr. Allegrati stated that even with 100 cubic feet per minute with 60% outside ventilation, it was "not possible to clean" the indoor air.

Advanced Healthy Building Management: Case Studies

The presenters of this session were David Governo, Ron Gobbell (replacing Greg Boothe), and Steve Ashkin. Mr. Governo discussed liability issues associated with IAQ problems, noting that negligence and breach of warranty were the most prominent. Cases cited by Mr. Governo included *Dolan v. Bay Construction* and *Martin County v. Rooney, Inc.* None of the cases cited included references to ETS.

Ron Gobbell discussed cases involving an apartment complex with multiple defects in construction and a Tennessee crime laboratory under construction. He stated that there was a necessity for better coordination between HVAC engineering and selection of building materials by architects.

Steve Ashkin presented a discussion of the Green Building Housekeeping Program and the case of the EPA Region 2 Headquarters in Boston, a project which was awarded the White House Closing the Circle Award. Selection and use of chemical cleaning agents in the office was discussed, as well as general cleaning practices.

Emerging Directions in IAQ Training

The presenters of this session were George Benda, John Tiffany, Frank Lewis and Rich Shaughnessy. A recurrent topic during the course of the presentations included IAQ certification. The group agreed that accreditation in IAQ presented conflict due to the diverse fields required in IAQ investigations. The July issue of *IAQ News* would discuss training.

IAQ and Ventilation in Schools and Universities

The presenters of this session included Art Wheeler, Marilyn Black and Bob Thompson. Mr. Wheeler discussed the HVAC selection parameters involved in school design. He stated that due to litigation, IAQ is currently the number one priority in selection and design of HVAC systems in schools.

Marilyn Black discussed field-data from Florida schools taken before, during and after renovation (a 3-month period), while students occupied the sampling sites. The investigation included sampling for CO₂, RSP, fungi and bacteria, dust mites and VOCs. She noted that the renovation "significantly reduced" TVOCs in all the schools (formaldehyde increased, but stayed below IAQ guidelines), but it was "unknown how or why." Particulates increased to levels above IAQ guidelines following renovation, according to Ms. Black, but no correlation with a source was provided.

Bob Thompson discussed the "Tools for Schools" Program and suggested that inadequate ventilation was the most common problem he has witnessed in IAQ. He stated that a report on the efficacy of the "Tools for Schools" program would be available from 7 months to a year. He also promoted the use of 100% outside air in ventilation as a means of eliminating IAQ complaints.

General Session III: ASHRAE 62R: Beyond Ventilation

The presenters of this general session included Paul Cammer, Michael Jawer, Jack Halliwell and Mike Schell. Paul Cammer began his presentation by facetiously announcing that he was "quitting" his job because he failed in BCIA's objective regarding the direction of SSPC 62 toward a health standard. He pointed to two failures in this regard: (1) ventilation rates based on judgements made by the drafters of 62R cannot be based upon health and (2) the "classification of air" has implications regarding both health and litigation, but it is not clear what levels are allowable. He stated that using "best professional judgement" is fine for ventilation but not for health. He ended his discussion by suggesting (rumor) that the residential standard (Section 6) would be dropped in the final draft due to the large numbers of comments received (especially the National Home Builders Association).

Michael Jawer presented BOMA's viewpoints with regard to 62R. He challenged the standard on 3 criteria: (1) unreasonable, given the scientific evidence, (2) unreliable, given the provision of technical achievability, and (3) it is not cost-effective. He also stated that the standard is inequitable and wholly unacceptable because it places the burden, and legal responsibility upon

building owners and/or operators. He pointed to a survey BOMA conducted that indicated that only 20% of occupants complained of IAQ problems. He stated that although the intentions of the ASHRAE committee were "good," "their reach exceeds their grasp."

Jack Halliwell identified "four facts" regarding the debate surrounding 62R. (1) Every group involved has an agenda: ASHRAE's agenda is to write a standard for IAQ. (2) 62R goes beyond ventilation [to include health], "because it has to." (3) 62R is an engineering standard that recognizes health in evaluation of indoor air. (4) 62R bifurcates pollutant loading by building and people (R_p and R_b).

Mike Schell stated his bias as a manufacturer. He stated four points regarding 62R: (1) 62R does not meet 15 cfm for control of odor, (2) building maintenance groups are not involved with the process, (3) the standard is too complex, (4) the standard does not build on previous standards. He stated that the designer "will be able to cover his ass," and "push the liability down the chain."

In the question and answer segment, the potential costs of the new standard were discussed. All presenters noted that the new standard would increase costs for building owners. Schell noted that costs would increase due to changes in design and operation and Jawer noted that increased record keeping would cause a diversion of resources. Cammer noted that with the past and current state of the process, the ASHRAE committee must depend on outside group to resolve problems in the proposed standard, while Schell believed that the same committee must resolve the problems through outside mediation. Halliwell noted that Hill will look at ASHRAE's standard marking processes ad hoc, but will not look into 62R. He concluded that IAQ is a complex issue that will need a complex solution.

State IAQ Programs & Strategies

The presenters for this session were Tobie Bernstein and Al Abend (Tim Hardin was scheduled as a presenter for this session, but did not attend). Noting that federal action on IAQ was unlikely in the foreseeable future, Ms. Bernstein suggested that state actions in IAQ have been prolific, namely in the area of programs and policy, not regulatory law. She suggested that the most active areas for state legislation in IAQ were ETS and radon. State and local programs were increasingly used to promote IAQ, such as the use of nonbinding guidance documents requiring notification of chemical (e.g., pesticides) use. Al Abend presented IAQ management program strategies used in the Maryland Public School System that includes an awards program that recognizes design, maintenance and operations.

New Filtration Standards in Building Environments

This session included discussion regarding ASHRAE 52.2 by David Ensor. He stated that the standard (52.2) has shifted to include health concerns. The current status of the completed standard will be addressed in a June 1997 meeting. Revisions have been drafted to the standard and the only changes expected will be (1) "deletion of reference to type A&B devices" and (2) some "clarification." In a separate note, Mr. Ensor suggested that ASHRAE GPC 17 will be examined for revision within the next 2-3 years by Mark Goznowski.

Tom Capes noted that 62R is "oriented beyond design," listing this as a reason why most individuals have not read the standard. An additional reason why the standard has not been read cited by Mr. Capes was that the standard is too complex a document, using both normative and informative language.

Indoor Pollutants and Health Effects

In the final session of the Programs, Research and Standards Track, Ted Passon and Marilyn Black presented the effects of microbiologic and volatile organic compounds on health indoors. Mr. Passon focused his discussion on microbial aspects of SBS and BRI including details of *Stachybotrys* and *Legionella*.

Ms. Black, in her discussion concerning VOCs, stated that where VOCs and health are concerned, "[we] know less than we actually know." She suggested that the individual states and EPA regional offices "set standards" for internal limits of TVOCs (e.g., office furniture emissions), but there is nothing expected "on the national scene." Ms. Black also mentioned in her discussion of microbial VOCs (mVOCs), that a new study was slated to begin in the next couple of months on sensory effects of exposure to mVOCs. She also stated that NIOSH is expected to conduct a study of aircraft cabin VOCs and California will examine automotive cabin VOC levels, although the progress or stage of each of these studies was not discussed.